

**1-10. (cancelled)**

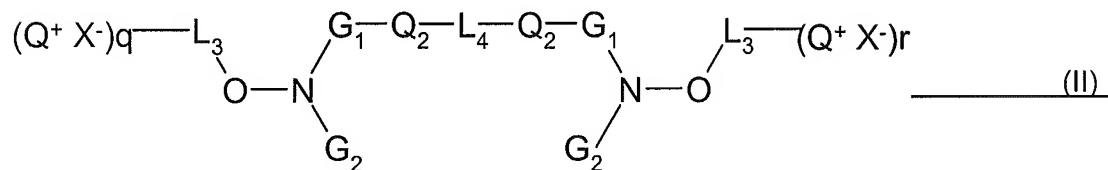
A) providing a first aqueous dispersion of a natural or synthetic clay which can be partially intercalated and/or exfoliated and wherein said clay has an exchangeable cation; adding to said dispersion a compound of formula Ia, Ib, Ic, Id, Ie, II, IIIa, IIIb, IIIc, IIId, IIIe, IVa, Va, Vb, Vc, Vd or Ve and exchanging said cation at least partially and a compound according to claim 1 or

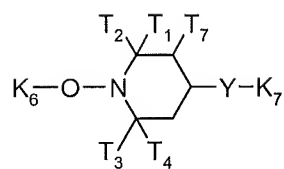
B) adding to said dispersion at least one ethylenically unsaturated monomer and polymerizing at least a portion of said ethylenically unsaturated monomer,

(la)                      (lb)                      (lc)

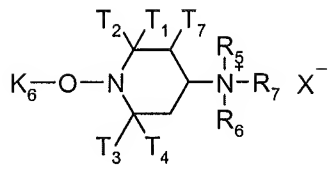
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(ld)                      (le)

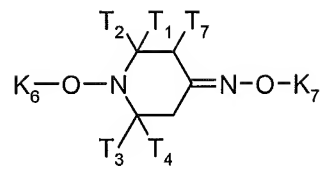




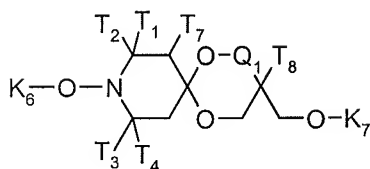
(IIIa)



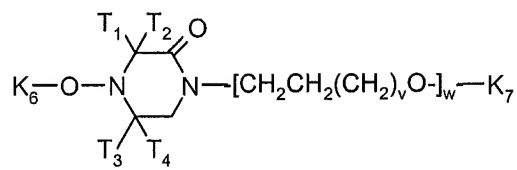
(IIIb)



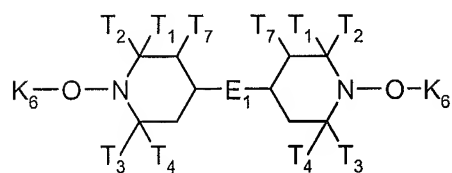
(IIIc)



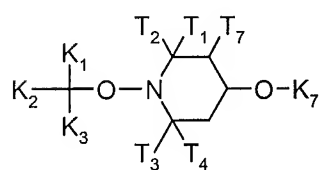
(IIIId)



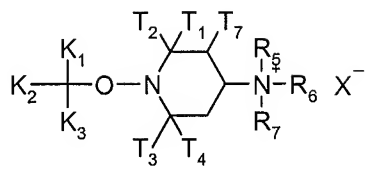
(IIIe)



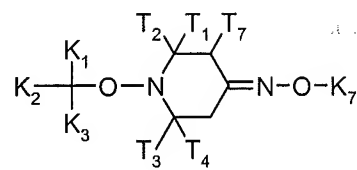
(IVa)



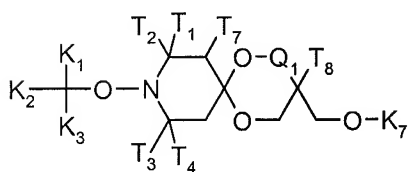
(Va)



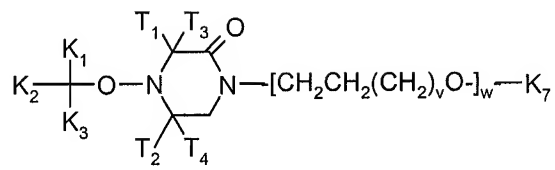
(Vb)



(Vc)



(Vd)



(Ve)

wherein

$T_1$ ,  $T_2$ ,  $T_3$  and  $T_4$  are independently methyl or ethyl with the proviso that at least one is ethyl;

$T_5$  and  $T_6$  are hydrogen or

$T_5$  and  $T_6$  together are a group  $=O$ ,  $=NOH$ ,  $=NO-T_9$  or

$T_5$  is hydrogen and  $T_6$  is  $-O-T_9$  or  $-NR_9-T_9$ .

$T_9$  is hydrogen,  $R_9$  or  $-C(O)-R_9$ ;

$T_7$  is hydrogen or methyl;

$Q_1$  is a direct bond or a  $-CH_2-$  group; wherein

if  $Q_1$  is a direct bond,  $T_8$  is hydrogen, and

if  $Q_1$  is  $-CH_2-$ ,  $T_8$  is methyl or ethyl;

$T_{10}$  is hydrogen or methyl;

$T_{11}$ ,  $T_{12}$ ,  $T_{13}$ ,  $T_{14}$ ,  $T_{15}$  and  $T_{16}$  independently are  $C_1-C_{18}$ alkyl,  $C_3-C_{18}$ alkenyl,  $C_3-C_{18}$ alkinyl,  $C_5-C_{12}$ cycloalkyl, phenyl or  $C_7-C_9$ phenylalkyl; or

$T_{11}$  is hydrogen and  $T_{12}$  is a group  $-P(O)(OC_2H_5)_2$  and the others are as defined above;

or  $T_{11}$  and  $T_{14}$  are a group  $-CH_2-O-T_9$  and the others are as defined above; or

$T_{16}$  is a group  $-C(O)-Y-R_5$  and the others are as defined above; or

$T_{11}$ ,  $T_{12}$  and  $T_{13}$  are a group  $-CH_2OH$ ;

$Y$  is  $O$  or  $NR_9$ ;

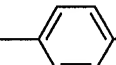
~~$Q_4$  is a direct bond or a  $-CH_2-$  group; wherein~~

~~if  $Q_4$  is a direct bond,  $T_8$  is hydrogen, and~~

~~if  $Q_4$  is  $-CH_2-$ ,  $T_8$  is methyl or ethyl;~~

$v$  is a number from 0 to 10 and  $w$  is 0 or 1;

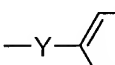
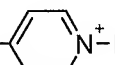
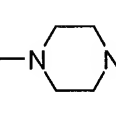
$K_1$  and  $K_2$  are hydrogen,  $C_1-C_{18}$ alkyl,  $C_5-C_{12}$ cycloalkyl, phenyl or  $C_7-C_9$ phenylalkyl and

$K_3$  is a group  $-COK_4$  or   $-Z-K_5$  where

$K_4$  is  $Y-[(CH_2-CH_2)-(CH_2)_s-N^+R_5R_6X^-]_t-CH_2-CH_2-(CH_2)_s-N^+R_5R_6R_7X^-$  or

$-Y-CH_2-CHOH-CH_2-N^+R_5R_6X^--[[(CH_2-CH_2)-(CH_2)_s-N^+R_5R_6X^-]_t-CH_2-CH_2-(CH_2)_s-N^+R_5R_6R_7X^-]_u$ ,

where  $s$  and  $t$  are each a number from 0-4 and  $u$  is 1; or

$K_4$  is a group   $-Q^+X^-$ ,   $-N^+R_5X^-$  or   $-N^+R_5R_6X^-$  or

Z is  $-\text{C}(\text{O})-$  or a direct bond, wherein

if Z is  $-\text{C}(\text{O})-$ ,  $\text{K}_5$  has the meaning of  $\text{K}_4$ , and

if Z is a direct bond,  $\text{K}_5$  is

$\text{O}-\text{CH}_2-\text{CHOH}-\text{CH}_2-\text{N}^+ \text{R}_5 \text{R}_6 \text{X}^- - \{[(\text{CH}_2-\text{CH}_2)-(\text{CH}_2)_s-\text{N}^+ \text{R}_5 \text{R}_6 \text{X}]_t - \text{CH}_2-\text{CH}_2-(\text{CH}_2)_s-\text{N}^+ \text{R}_5 \text{R}_6 \text{R}_7 \text{X}\}_u$ ,  $\text{Q}^+ \text{X}^-$ ,  $-\text{CH}_2\text{Q}^+ \text{X}^-$  or  $-\text{CHCH}_3\text{Q}^+ \text{X}^-$ ;

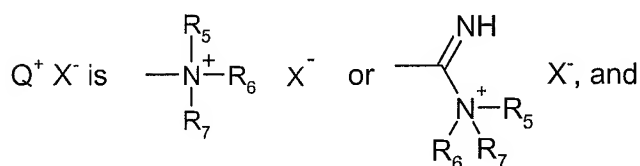
$\text{K}_7$  is a group

$-\text{CH}_2-\text{CHOH}-\text{CH}_2-\text{N}^+ \text{R}_5 \text{R}_6 \text{X}^- - \{[(\text{CH}_2-\text{CH}_2)-(\text{CH}_2)_s-\text{N}^+ \text{R}_5 \text{R}_6 \text{X}]_t - \text{CH}_2-\text{CH}_2-(\text{CH}_2)_s-\text{N}^+ \text{R}_5 \text{R}_6 \text{R}_7 \text{X}\}_u$ ,

where s and t are each a number from 0-4 and u is 1; or a group  $-\text{D}_1-\text{Q}^+ \text{X}^-$  where

$\text{D}_1$  is  $\text{C}_1$ - $\text{C}_{12}$ alkylene,  $\text{C}_1$ - $\text{C}_{12}$ alkylene which is interrupted by one or more O, S, or  $\text{NR}_9$  atoms,

$\text{C}_5$ - $\text{C}_{12}$ cycloalkylene or phenylene;



$\text{R}_1$  is  $\text{C}_1$ - $\text{C}_{18}$ alkylene.

$\text{R}_2$  is a direct bond or  $\text{C}_1$ - $\text{C}_{18}$ alkylene.

$\text{R}_3$  is hydrogen or  $\text{C}_1$ - $\text{C}_{18}$ alkyl.

$\text{R}_4$  is hydrogen or  $\text{C}_1$ - $\text{C}_{18}$ alkyl.

$\text{R}_5$ ,  $\text{R}_6$  and  $\text{R}_7$  are each independently of the others hydrogen,  $\text{C}_1$ - $\text{C}_{18}$ alkyl,  $\text{C}_3$ - $\text{C}_{12}$ cycloalkyl, phenyl or  $\text{C}_7$ - $\text{C}_9$ phenylalkyl or  $\text{C}_6$ - $\text{C}_{10}$ heteroaryl, which all may be unsubstituted or substituted by halogen, OH,  $\text{NO}_2$ , CN,  $\text{C}_1$ - $\text{C}_4$ alkoxy, or

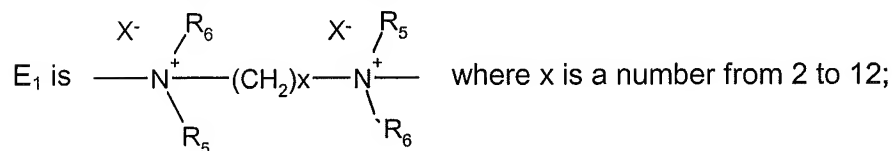
$\text{R}_5$ ,  $\text{R}_6$  and  $\text{R}_7$  together with the nitrogen or phosphorous atom to which they are bonded form a 3-12 membered monocyclic or polycyclic ring which may contain further heteroatoms;

$\text{R}_9$  is hydrogen,  $\text{C}_1$ - $\text{C}_{18}$ alkyl,  $\text{C}_3$ - $\text{C}_{18}$ alkenyl,  $\text{C}_3$ - $\text{C}_{18}$ alkinyl, phenyl,  $\text{C}_7$ - $\text{C}_9$ phenylalkyl, which all may be unsubstituted or substituted by one or more hydroxy, halogen or  $\text{C}_1$ - $\text{C}_4$ alkoxy groups

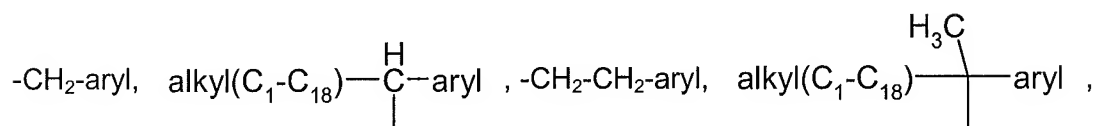
$\text{R}_{22}$  is  $\text{C}_1$ - $\text{C}_{18}$ alkyl;

$\text{X}^-$  is the anion of a  $\text{C}_1$ - $\text{C}_{18}$ carboxylic acid which may contain more than one carboxylic acid group, fluoride, chloride, bromide, iodide, nitrite, nitrate, hydroxide, acetate, hydrogen sulfate, sulfate,  $\text{C}_1$ - $\text{C}_{18}$ alkoxy sulfate, aromatic or aliphatic sulfonate, carbonate, hydrogen carbonate,

perchlorate, chlorate, tetrafluoroborate, borate, phosphate, hydrogen phosphate, dihydrogen phosphate or mixtures thereof ;

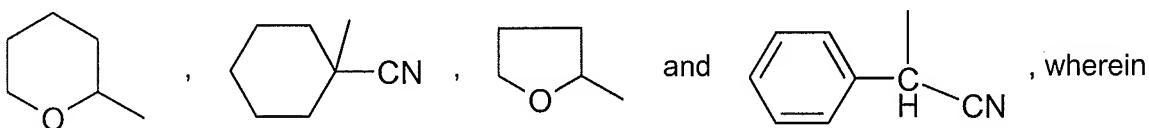


K<sub>6</sub> is selected from the group consisting of



(C<sub>5</sub>-C<sub>6</sub>cycloalkyl)<sub>2</sub>CCN, (C<sub>1</sub>-C<sub>12</sub>alkyl)<sub>2</sub>CCN, -CH<sub>2</sub>CH=CH<sub>2</sub>, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-C(O)-(C<sub>1</sub>-C<sub>12</sub>)alkyl,  
 (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-C(O)-(C<sub>6</sub>-C<sub>10</sub>)aryl, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-C(O)-(C<sub>1</sub>-C<sub>12</sub>)alkoxy,  
 (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-C(O)-phenoxy, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-C(O)-N-di(C<sub>1</sub>-C<sub>12</sub>)alkyl,  
 (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-CO-NH(C<sub>1</sub>-C<sub>12</sub>)alkyl, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>30</sub>-CO-NH<sub>2</sub>, -CH<sub>2</sub>CH=CH-CH<sub>3</sub>,

-CH<sub>2</sub>-C(CH<sub>3</sub>)=CH<sub>2</sub>, -CH<sub>2</sub>-CH=CH-phenyl, -CH<sub>2</sub>-C≡CH, 3-cyclohexenyl, 3-cyclopentenyl,



R<sub>30</sub> is hydrogen or C<sub>1</sub>-C<sub>12</sub>alkyl;

the alkyl groups are unsubstituted or substituted with one or more -OH, -COOH or -C(O)R<sub>30</sub> groups;  
 and

the aryl groups are phenyl or naphthyl which are unsubstituted or substituted with C<sub>1</sub>-C<sub>12</sub>alkyl,  
 halogen, C<sub>1</sub>-C<sub>12</sub>alkoxy, C<sub>1</sub>-C<sub>12</sub>alkylcarbonyl, glycidyl, OH, -COOH or -COO(C<sub>1</sub>-C<sub>12</sub>)alkyl

~~B) adding to said dispersion at least one ethylenically unsaturated monomer and polymerizing at least a portion of said ethylenically unsaturated monomer.~~

and wherein in formula II

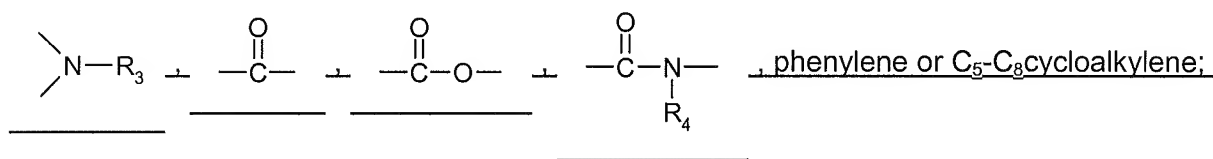
G<sub>1</sub> and G<sub>2</sub> independently represent a tertiary carbon atom to which an unsubstituted C<sub>1</sub>-C<sub>18</sub>alkyl or phenyl or with CN, COC<sub>1</sub>-C<sub>18</sub>alkyl, CO-phenyl, COOC<sub>1</sub>-C<sub>18</sub>alkyl, OC<sub>1</sub>-C<sub>18</sub>alkyl, NO<sub>2</sub>, NHC<sub>1</sub>-C<sub>18</sub>alkyl or N(C<sub>1</sub>-C<sub>18</sub>)<sub>2</sub>alkyl substituted alkyl or phenyl groups are bonded; or one of

G<sub>1</sub> and G<sub>2</sub> is a secondary carbon atom to which a group -P(O)(OR<sub>22</sub>)<sub>2</sub> is bonded and the other is as defined above; or

G<sub>1</sub> and G<sub>2</sub> together with the nitrogen atom to which they are bonded form a 5 to 8 membered heterocyclic ring or a polycyclic or spirocyclic 5 to 20 membered heterocyclic ring system which is substituted with 4 C<sub>1</sub>-C<sub>4</sub>alkyl groups or 2 C<sub>5</sub>-C<sub>12</sub> spirocycloalkyl groups in the ortho position to the nitrogen atom and which may be further substituted with one or more C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>1</sub>-C<sub>18</sub>alkoxy or =O groups; and which may be interrupted by a further oxygen or nitrogen atom;

with the proviso that at least one of the 4 C<sub>1</sub>-C<sub>4</sub>alkyl groups in ortho position to the nitrogen atom is higher alkyl than methyl;

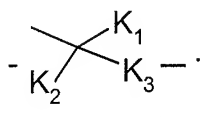
L<sub>4</sub> is a linking group selected from the group consisting of a direct bond, R<sub>1</sub>-Y or R<sub>2</sub>-C(O)-Y- where Y is attached to G<sub>1</sub> and/or G<sub>2</sub>; C<sub>1</sub>-C<sub>25</sub>alkylene, C<sub>2</sub>-C<sub>25</sub>alkylene interrupted by -O-, -S-, -SO-, -SO<sub>2</sub>-,



Q<sub>2</sub> is a direct bond, O, NR<sub>5</sub> or NR<sub>5</sub>R<sub>6</sub>;

L<sub>3</sub> is a group containing at least one carbon atom and is such that the radical ·L<sub>3</sub>(Q<sup>+</sup>X<sup>-</sup>) derived from the group is able to initiate polymerization of ethylenically unsaturated monomers;  
and the group

-L<sub>3</sub>(Q<sup>+</sup>X<sup>-</sup>) in formula II is a group



**12. (original)** A process according to claim 11 wherein the water phase of step A) is at least partially removed before performing step B).

**13. (previously presented)** A process according to claim 11 wherein the compound is added in an amount of from 1% to 100% by weight, based on the weight of the clay.

**14. (previously presented)** A process according to claim 11 wherein the ethylenically unsaturated monomer or oligomer is selected from the group consisting of styrene, substituted styrenes, conjugated dienes, acrolein, vinyl acetate, vinylpyrrolidone, vinylimidazole, maleic anhydride, (alkyl)acrylic acid anhydrides, (alkyl)acrylic acid salts, (alkyl)acrylic esters, (meth)acrylonitriles and (alkyl)acrylamides, vinyl halides and vinylidene halides or mixtures thereof.

**15. (previously presented)** A process according to claim 14 wherein the ethylenically unsaturated monomers are styrene,  $\alpha$ -methyl styrene, p-methyl styrene or a compound of formula  $\text{CH}_2=\text{C}(\text{R}_a)-(\text{C}=\text{Z})-\text{R}_b$ , wherein  $\text{R}_a$  is hydrogen or  $\text{C}_1$ - $\text{C}_4$ alkyl,  $\text{R}_b$  is  $\text{NH}_2$ ,  $\text{O}^-(\text{Me}^+)$ , glycidyl, unsubstituted  $\text{C}_1$ - $\text{C}_{18}$ alkoxy,  $\text{C}_2$ - $\text{C}_{100}$ alkoxy interrupted by at least one N and/or O atom, or hydroxy-substituted  $\text{C}_1$ - $\text{C}_{18}$ alkoxy, unsubstituted  $\text{C}_1$ - $\text{C}_{18}$ alkylamino, di( $\text{C}_1$ - $\text{C}_{18}$ alkyl)amino, hydroxy-substituted  $\text{C}_1$ - $\text{C}_{18}$ alkylamino or hydroxy-substituted di( $\text{C}_1$ - $\text{C}_{18}$ alkyl)amino,  $-\text{O}-\text{CH}_2-\text{CH}_2-\text{N}(\text{CH}_3)_2$  or  $-\text{O}-\text{CH}_2-\text{CH}_2-\text{N}^+\text{H}(\text{CH}_3)_2 \text{An}^-$ ; wherein  $\text{An}^-$  is an anion of a monovalent organic or inorganic acid; Me is a monovalent metal atom or the ammonium ion and Z is oxygen or sulfur.

**16. (original)** A process according to claim 11 wherein an acid containing unsaturated monomer is added, which is selected from the group consisting of methacrylic anhydride, maleic anhydride, itaconic anhydride, acrylic acid, methacrylic acid, itaconic acid, maleic acid, fumaric acid, acryloxypropionic acid, (meth)acryloxypropionic acid, styrene sulfonic acid, ethylmethacrylate-2-sulphonic acid, 2-acrylamido-2-methylpropane, sulphonic acid; phosphoethylmethacrylate; the corresponding salts of the acid containing monomer, and combinations thereof.

**17. (original)** A process according to claim 11 wherein step B) is repeated with a second ethylenically unsaturated monomer which is different from the first one, leading to a block copolymer.

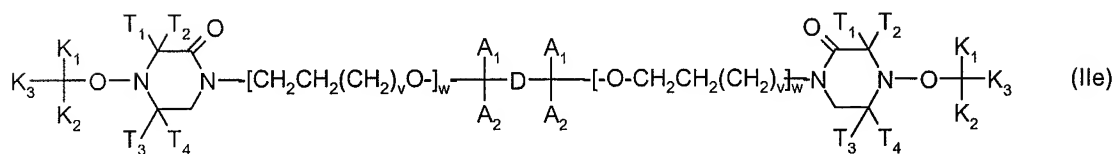
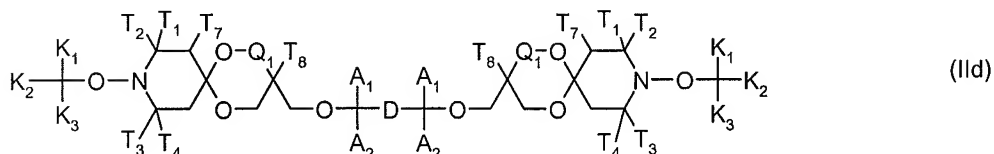
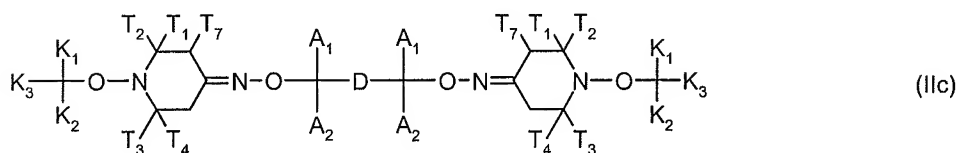
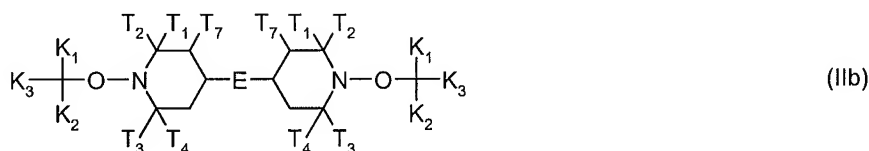
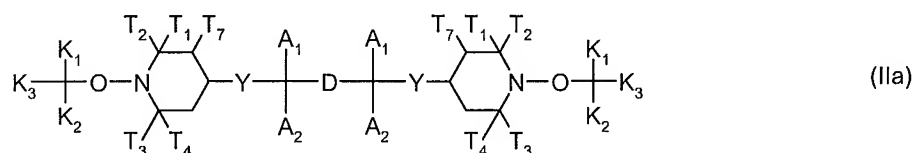
**18. (previously presented)** A process according to claim 11 wherein the natural or synthetic clay is selected from the group consisting of montmorillonite, saponite, beidellite, montronite, hectorite, stevensite, vermiculite, kaolinite, hallosite, synthetic phyllosilicates, and combinations thereof.

**19. (previously presented)** A monomer/polymer clay nanocomposite dispersion obtained by a process according to claim 11.

**20-22. (cancelled)**

**23. (previously presented)** A method of improving the properties of paints, coatings, inks, adhesives, reactive diluents or thermoplastic materials which comprises incorporating a monomer/polymer clay nanocomposite dispersion according to claim 19 therein.

**24. (new)** A process according to claim 11 wherein the compound of formula Ia, Ib, Ic, Id, Ie, II, IIIa, IIIb, IIIc, IIId, IIle, IVa, Va, Vb, Vc, Vd or Ve is a compound of formula IIa, IIb, IIc, IIId or IIle

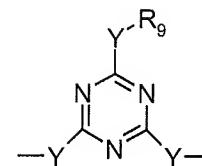


wherein A<sub>1</sub> and A<sub>2</sub> are independently hydrogen or together with the carbon atom to which they are bonded form a carbonyl group, -C(O)-;

D is a direct bond or C<sub>1</sub>-C<sub>12</sub>alkylene, C<sub>1</sub>-C<sub>12</sub>alkylene which is interrupted by one or more O, S, or NR<sub>9</sub> atoms, C<sub>5</sub>-C<sub>12</sub>cycloalkylene or phenylene;

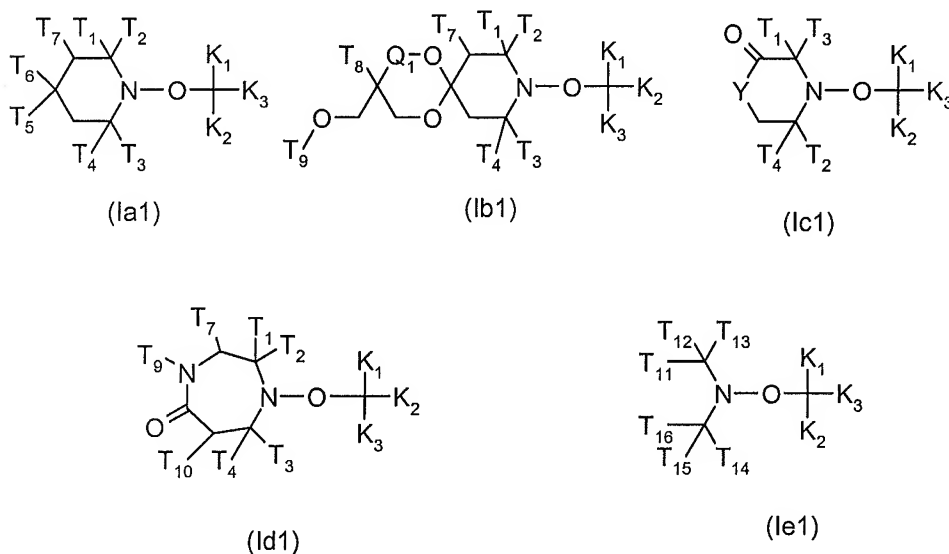


E is a group  $-\text{NR}_9-(\text{CH}_2)_x-\text{NR}_9-$  where x is a number from 2 to 12, or a group



v is a number from 0 to 10 and w is 0 or 1.

**25. (new)** A process according to claim 11 wherein the compound of formula Ia, Ib, Ic, Id, Ie, II, IIIa, IIIb, IIIc, IIId, IIle, IVa, Va, Vb, Vc, Vd or Ve is a compound of formula Ia1, Ib1, Ic1, Id1 or Ie1



wherein

$Q_1$  is a direct bond or  $\text{CH}_2$ ;

$T_1$  and  $T_3$  are ethyl and  $T_2$  and  $T_4$  are methyl;

$T_7$  is methyl or H;  $T_{10}$  is H if  $T_7$  is methyl and  $T_{10}$  is methyl if  $T_7$  is H;

if  $Q_1$  is a direct bond,  $T_8$  is H;

if  $Q_1$  is  $\text{CH}_2$ ,  $T_8$  is methyl or ethyl;

$T_{11}$ ,  $T_{12}$ ,  $T_{13}$ ,  $T_{14}$ ,  $T_{15}$  and  $T_{16}$  are independently methyl or ethyl; or

$T_{11}$  is H,  $T_{12}$  is isopropyl,  $T_{13}$  is phenyl and  $T_{14}$ ,  $T_{15}$ , and  $T_{16}$  are methyl; or

$T_{11}$  is H,  $T_{12}$  is  $-\text{P}(=\text{O})(\text{OC}_2\text{H}_5)_2$ ,  $T_{13}$  is t-butyl and  $T_{14}$ ,  $T_{15}$ , and  $T_{16}$  are methyl; or

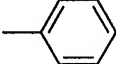
$T_{11}$  and  $T_{14}$  are  $-\text{CH}_2\text{O}-T_9$  and  $T_{12}$  and  $T_{15}$  are methyl or phenyl and  $T_{13}$  and  $T_{16}$  are methyl or ethyl; or

$T_{11}$ ,  $T_{12}$ ,  $T_{13}$ ,  $T_{14}$ ,  $T_{15}$  are methyl and  $T_{16}$  is a group  $-\text{CO}-\text{O}-R_9$  or  $-\text{CON}(\text{R}_9)_2$ ; or

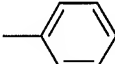
$T_{11}$ ,  $T_{12}$  and  $T_{13}$  are  $-\text{CH}_2\text{OH}$ ,  $T_{14}$  is H,  $T_{15}$  is isopropyl and  $T_{16}$  phenyl;

T<sub>9</sub> is hydrogen, R<sub>9</sub> or -C(O)-R<sub>9</sub>, where R<sub>9</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>3</sub>-C<sub>18</sub>alkenyl, C<sub>3</sub>-C<sub>18</sub>alkinyl, phenyl or C<sub>7</sub>-C<sub>9</sub>phenylalkyl;

K<sub>1</sub> is H, K<sub>2</sub> is methyl or ethyl and

K<sub>3</sub> is a group -CO-K<sub>4</sub> or -Z-K<sub>5</sub>;

K<sub>4</sub> is -Y-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup>X<sup>-</sup>R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> or; -Y-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup>X<sup>-</sup>R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> where Y is O or NR<sub>9</sub> and s is a number from 0 to 2;

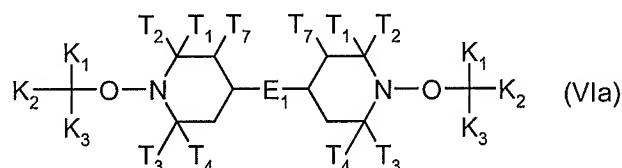
if K<sub>3</sub> is -Z-K<sub>5</sub>, Z is -CO- or a direct bond; and

if Z is -CO-, K<sub>5</sub> has the same meaning as K<sub>4</sub>;

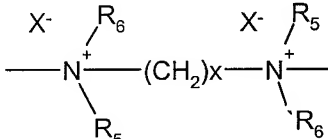
if Z is a direct bond, K<sub>5</sub> is a group -O-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup>X<sup>-</sup>R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> or -CH<sub>2</sub>N<sup>+</sup>R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup>.

**26. (new)** A process for preparing a monomer/polymer clay nanocomposite dispersion comprising the steps of

- A) providing a first aqueous dispersion of a natural or synthetic clay which can be partially intercalated and/or exfoliated and wherein said clay has an exchangeable cation; adding to said dispersion a compound of formula VIa and exchanging said cation at least partially and
  - B) adding to said dispersion at least one ethylenically unsaturated monomer and polymerizing at least a portion of said ethylenically unsaturated monomer,
- wherein formula VIa is



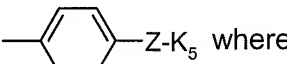
T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> are independently methyl or ethyl with the proviso that at least one is ethyl; T<sub>7</sub> is hydrogen or methyl;

E<sub>1</sub> is  where x is a number from 2 to 12;

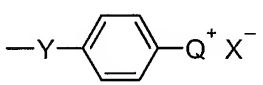
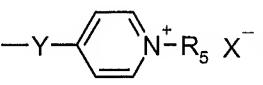
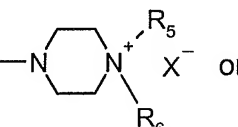
R<sub>5</sub> and R<sub>6</sub> are each independently of the others hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>3</sub>-C<sub>12</sub>cycloalkyl, phenyl or C<sub>7</sub>-C<sub>9</sub>phenylalkyl or C<sub>6</sub>-C<sub>10</sub>heteroaryl, which all may be unsubstituted or substituted by halogen, OH, NO<sub>2</sub>, CN, C<sub>1</sub>-C<sub>4</sub>alkoxy;

X<sup>-</sup> is the anion of a C<sub>1</sub>-C<sub>18</sub>carboxylic acid which may contain more than one carboxylic acid group, fluoride, chloride, bromide, iodide, nitrite, nitrate, hydroxide, acetate, hydrogen sulfate, sulfate, C<sub>1</sub>-C<sub>18</sub>alkoxy sulfate, aromatic or aliphatic sulfonate, carbonate, hydrogen carbonate, perchlorate, chlorate, tetrafluoroborate, borate, phosphate, hydrogen phosphate, dihydrogen phosphate or mixtures thereof;

K<sub>1</sub> and K<sub>2</sub> are hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl, phenyl or C<sub>7</sub>-C<sub>9</sub>phenylalkyl and

K<sub>3</sub> is a group -COK<sub>4</sub> or  where

K<sub>4</sub> is Y-[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]<sub>t</sub>-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup> or  
-Y-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>X<sup>-</sup>-{[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]<sub>t</sub>-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup>]<sub>u</sub>,  
where s and t are each a number from 0-4 and u is 1; or

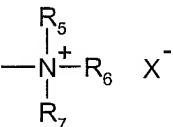
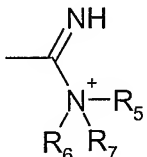
K<sub>4</sub> is a group ,  or  or

Z is -C(O)- or a direct bond, wherein

if Z is -C(O)-, K<sub>5</sub> has the meaning of K<sub>4</sub>, and

if Z is a direct bond, K<sub>5</sub> is

O-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>-{[(CH<sub>2</sub>-CH<sub>2</sub>)-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub> X<sup>-</sup>]<sub>t</sub>-CH<sub>2</sub>-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>s</sub>-N<sup>+</sup> R<sub>5</sub>R<sub>6</sub>R<sub>7</sub> X<sup>-</sup>]<sub>u</sub>, Q<sup>+</sup>X<sup>-</sup>,  
-CH<sub>2</sub>Q<sup>+</sup>X<sup>-</sup> or -CHCH<sub>3</sub>Q<sup>+</sup>X<sup>-</sup>; and

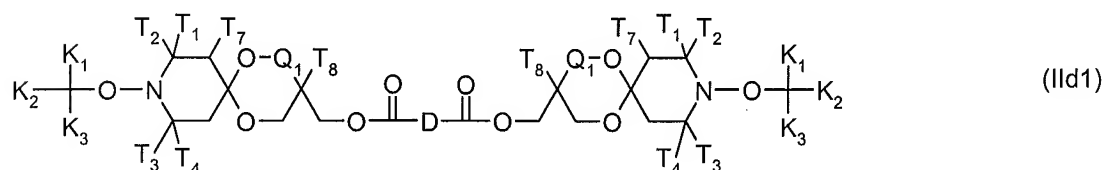
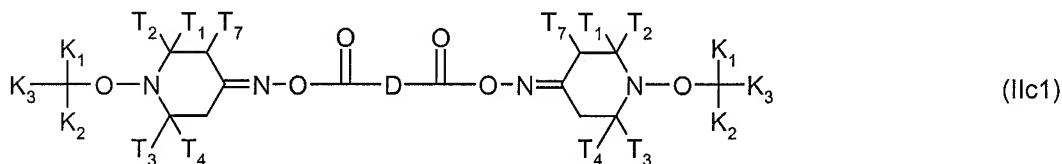
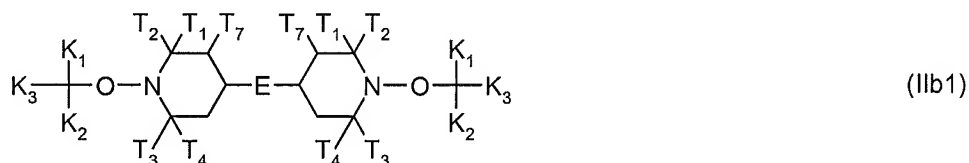
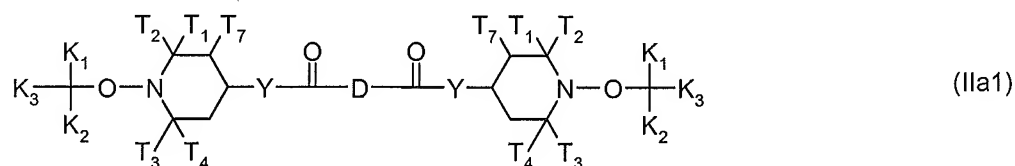
Q<sup>+</sup> X<sup>-</sup> is  or  X<sup>-</sup>, and

R<sub>7</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>3</sub>-C<sub>12</sub>cycloalkyl, phenyl or C<sub>7</sub>-C<sub>9</sub>phenylalkyl or C<sub>6</sub>-C<sub>10</sub>heteroaryl, which all may be unsubstituted or substituted by halogen, OH, NO<sub>2</sub>, CN, C<sub>1</sub>-C<sub>4</sub>alkoxy, or  
R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> together with the nitrogen or phosphorous atom to which they are bonded form a 3-12 membered monocyclic or polycyclic ring which may contain further heteroatoms.

**27. (new)** A process for preparing a monomer/polymer clay nanocomposite dispersion comprising the steps of

- A) providing a first aqueous dispersion of a natural or synthetic clay which can be partially intercalated and/or exfoliated and wherein said clay has an exchangeable cation;  
 adding to said dispersion a compound of formula IIa1, IIb1, IIc1 or IId1 and exchanging said cation at least partially and
- B) adding to said dispersion at least one ethylenically unsaturated monomer and polymerizing at least a portion of said ethylenically unsaturated monomer,

wherein formula IIa1, IIb1, IIc1 and IId1 are



wherein

$\text{Q}_1$  is a direct bond or  $\text{CH}_2$ ;

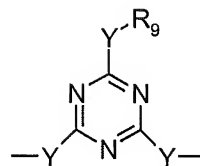
$\text{T}_1$  and  $\text{T}_3$  are ethyl and  $\text{T}_2$ ,  $\text{T}_4$  and  $\text{T}_7$  are methyl;

if  $\text{Q}_1$  is a direct bond,  $\text{T}_8$  is H; and

if  $\text{Q}_1$  is  $\text{CH}_2$ ,  $\text{T}_8$  is methyl or ethyl;

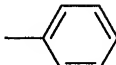
$\text{D}$  is a direct bond,  $\text{C}_1$ - $\text{C}_{12}$ alkylene or phenylene;

E is  $-\text{NR}_5-(\text{CH}_2)_x-\text{NR}_5-$  where x is 2 to 12 or a group



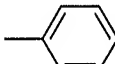
wherein Y is  $=\text{NR}_9$ ;

$\text{K}_1$  is H,  $\text{K}_2$  is methyl or ethyl and

$\text{K}_3$  is a group  $-\text{CO}-\text{K}_4$  or   $-\text{Z}-\text{K}_5$ ;

$\text{K}_4$  is  $-\text{Y}-\text{CH}_2-\text{CH}_2-(\text{CH}_2)_s-\text{N}^+\text{X}^-\text{R}_5\text{R}_6\text{R}_7$  or  $-\text{Y}-\text{CH}_2-\text{CHOH}-\text{CH}_2-\text{N}-\text{CH}_2-\text{CH}_2-(\text{CH}_2)_s-\text{N}^+\text{X}^-\text{R}_5\text{R}_6\text{R}_7$ , where Y is O or  $\text{NR}_9$  and s is a number from 0 to 2;

$\text{R}_9$  is hydrogen,  $\text{C}_1$ - $\text{C}_{18}$ alkyl,  $\text{C}_3$ - $\text{C}_{18}$ alkenyl,  $\text{C}_3$ - $\text{C}_{18}$ alkynyl, phenyl or  $\text{C}_7$ - $\text{C}_9$ phenylalkyl;

if  $\text{K}_3$  is   $-\text{Z}-\text{K}_5$ , Z is  $-\text{CO}-$  or a direct bond;

if Z is  $-\text{CO}-$ ,  $\text{K}_5$  has the same meaning as  $\text{K}_4$ ;

if Z is a direct bond,  $\text{K}_5$  is a group  $-\text{O}-\text{CH}_2-\text{CHOH}-\text{CH}_2-\text{N}-\text{CH}_2-\text{CH}_2-(\text{CH}_2)_s-\text{N}^+\text{X}^-\text{R}_5\text{R}_6\text{R}_7$  or  $-\text{CH}_2\text{N}^+\text{R}_5\text{R}_6\text{R}_7 \text{X}^-$ ;

and

$\text{X}^-$  is the anion of a  $\text{C}_1$ - $\text{C}_{18}$ carboxylic acid which may contain more than one carboxylic acid group, fluoride, chloride, bromide, iodide, nitrite, nitrate, hydroxide, acetate, hydrogen sulfate, sulfate,  $\text{C}_{18}$ alkoxy sulfate, aromatic or aliphatic sulfonate, carbonate, hydrogen carbonate, perchlorate, chlorate, tetrafluoroborate, borate, phosphate, hydrogen phosphate, dihydrogen phosphate or mixtures thereof.

**28. (new)** A process according to claim 26 wherein the ethylenically unsaturated monomer or oligomer is selected from the group consisting of styrene, substituted styrenes, conjugated dienes, acrolein, vinyl acetate, vinylpyrrolidone, vinylimidazole, maleic anhydride, (alkyl)acrylic acid anhydrides, (alkyl)acrylic acid salts, (alkyl)acrylic esters, (meth)acrylonitriles and (alkyl)acrylamides, vinyl halides and vinylidene halides or mixtures thereof.

**29. (new)** A process according to claim 27 wherein the ethylenically unsaturated monomer or oligomer is selected from the group consisting of styrene, substituted styrenes, conjugated dienes, acrolein, vinyl acetate, vinylpyrrolidone, vinylimidazole, maleic anhydride, (alkyl)acrylic acid anhydrides, (alkyl)acrylic acid salts, (alkyl)acrylic esters, (meth)acrylonitriles and (alkyl)acrylamides, vinyl halides and vinylidene halides or mixtures thereof.

**30. (new)** A monomer/polymer clay nanocomposite dispersion obtained by a process according to claim 26.

**31. (new)** A monomer/polymer clay nanocomposite dispersion obtained by a process according to claim 27.